VYLCHANOV, V.Kh., doktor, starshiy nauchnyy sotrudnik

"Inflammation (pathogenetic aspects)" by D.E. Al'pern. Reviewed by V.Kh. Vylchanov. Vrach. delo no.8:149-150 Ag '61. (MIRA 15:3)

1. Institut mikrobiologii Bolgarskoy Akademii nauk, Sofiya.
(INFLAMMATION)
(AL'PERN, D.E.)

VYLCHANOV, V. Kh.

BULGARIA / General Problems of Pathology. Immunity. T-2

Abs Jour : Ref. Zh.-Biol. No. 2, 1958, No 7575

Author : Vylchanov, V. Kh., Ruschukliev, Y.

Inst :

Title : The Influence of a Physical Load on the Non-Specific Phagocytic Reaction of the Blood.

Orig Pub : Isv. IN-TA, Biol. Blg, AN, 1956, 7, 209-229

Abstract : The intensive physical load on the ergometer bicycle for a period of 30-40 min. (30,000 - 40,000 kg/m) caused a diminution of phagocytosis (lasting 30 min. to several hours) to 48% of the initial level in 15 healthy subjects of from 19 to 24 years of age. The depression of phagocytosis was more pronounced and more prolonged in untrained subjects. During the application of an intensive physical load "a myogenic"

Card : 1/2

VYLCHANOV, V.Kh.

(19)

Sofia, Doklady [illegible], Vol 1[illegible], No 4, 1951 (continued)

12. "The Relation between the Specific Heat and the Moisture Content of Food Products," A. G. [illegible] (In French with Russian summary); pp 373-375.

13. "Notes on Structural and [illegible] Particularities of [illegible] [illegible] and the [illegible]," [illegible] and [illegible] Ivanov (In English with Russian summary); pp 377-3[illegible].

14. "Method of Investigating Root Pressure in Species of Trees," K. [illegible]. [illegible] (In Russian with German summary); pp 381-3[illegible].

15. "Cytochemical Studies of Nucleic Acids (DNA and RNA) in Carassius Auratus [illegible] (Black) [illegible]," C. A. [illegible] and E. [illegible] (In English with Russian summary); pp 3[illegible]-367.

16. "New Data on [illegible]," [illegible]. [illegible] (In English with Russian summary); pp 369-37[illegible].

17. "Studies on the [illegible] of Complement-Fixing, [illegible] and Antibodies," K. [illegible], [illegible], [illegible] and V. [illegible] (In English with Russian summary); pp 3[illegible].

15. "[illegible] — A New Species of the Family [illegible] ([illegible], [illegible]) from the Island of Crete ([illegible]), M. [illegible] (In German with Russian summary); pp 377-[illegible].

19. "Rapid Method of Quantitative Analysis of [illegible] for the Purpose of Selection," N. [illegible] and A. [illegible] (In French with Russian summary); pp [illegible].

20. "On the Structure of the [illegible] of the [illegible] of Rabbits Following Artificial [illegible]," O. [illegible] (In English with Russian summary); pp 405-[illegible].

21. "On the [illegible] of [illegible] of the Oral Cavity," O. D. [illegible] (In French with Russian summary); pp [illegible].

22. "Changes in the Electrical Conductivity of the Skin When There is Pressure on the [illegible]," [illegible]. [illegible] (In German with Russian summary); pp 413-416.

23. "The Influence of [illegible] Radiations on the [illegible] of the [illegible] Development of Chick [illegible]," P. [illegible] and P. [illegible] (In French with Russian summary); pp [illegible].

— 2/3 —

VYLCHANOV, V.Kh.; POPIVANOV, R.

Data demonstrating the antigenic relationship between Salmonella typhi and human leucocytes. Biul. eksp. biol. i med. 52 no.10: 89-92 O '61. (MIRA 15:1)

1. Iz Instituta biologii imeni Metodiya Popova Bolgarskoy akademii nauk i kafedry obshchey biologii Vysshego meditsinskogo instituta, Sofiya. Predstavlena deystvitel'nym chlenom AMN SSSR. N.N.Zhukovym-Verezhnikovym.

(EBERTHELLA TYPHOSA) (LEUCOCYTES)
(ANTIGENS AND ANTIBODIES)

VYLCHEV, Aleksandr, inzh.

Graphite electrodes with protective coatings and problems of graphite at the electrode butts. Stal' 24 no.7:615-617 Jl '64. (MIRA 18:1)

1. Metallurgicheskiy zavod im. Lenina, Narodnaya Respublika Bolgariya.

BULGARIA/Chemical Technology - Leather. Fur. Gelatin. Tanning Agents. Industrial Proteins. H-35

Abs Jour : Ref Zhur - Khimiya, No 24, 1958, 83930

Author : Vylchev, B.
Inst :
Title : The Utilization of Precipitates in Solutions of Vegetable Tanning Agents.

Orig Pub : Leka promyshlenost, 1957, 6, No 3, 9-14

Abstract : The factors causing the formation of precipitates in tanning solutions and their influence on tanning process were examined. This is especially important for blends of solutions because therein mutual peptization reactions might take place. Therefore a careful selection of blend components is essential and in the case when the solution is transferred from one tank into another, not less than 24 hours should be allowed for its settling. A blend of tanning agents producing large amounts of precipitate must

Card 1/2

Card 2/2

VYLCHEV, I. (Bolgariya)

Chess. Tekh.mol. 31 no.4:35 '63. (MIRA 16:6)
(Chess)

VYLCHEV, Iv.

Smoke is not a saboteur but a source of riches. Nauka i zhyttia 12 no.5:30 My '62. (MIRA 15:7)
(Smoke)
(Fertilizers and manures)

VYLCHEVA, R. I., Cand Tech Sci -- (diss) "Study of chemical transformations of the macro-molecule of cellulose of cotton fiber under the effect of light." Mos, 1958. 13 pp; 4 separate stitched sheets of drawings (Min of Higher Education USSR, Mos Textile Inst), 120 copies (KL, 17-58, 108)

SADOV, F.I.; VYLCHEVA, R.I.

Effect of light on cotton fiber cellulose. Izv.vys.uchab.zav.; tekh.tekst.prom. no.6:66-75 '58. (MIRA 12:4)

1. Moskovskiy tekstil'nyy institut.
(Cotton finishing) (Photochemistry)

SADOV, F.I.; VYLCHEVA, R.I.

Effect of light on cotton fiber cellulose. Report No.2. Izv.vys. ucheb.zav.; tekh.tekst.prom. no.1:132-136 '59. (MIRA 12:6)

1. Moskovskiy tekstil'nyy institut.
(Textile chemistry) (Cotton finishing)
(Solar radiation)

VYLEGZHANIN, A.F.

Skin ulcers and abscesses in fishes. Veterinariia 42 no.12: 34-36 D '65. (MIRA 19:1)

1. Astrakhanskiy tekhnicheskiy institut rybnoy promyshlennosti i khozyaystva.

VYLEGZHANIK, A.F., kand. vet. nauk.

Veterinary inspection of fish. Veterinariia 35 no.6:41-43 Je '58.
(MIRA 11:6)

1. Dagestanskiy sel'skokhozyaystvennyy institut.
(Fishery products inspection)

VYLEGZHANIN, A. F.

FD-1320

USSR/Medicine - Veterinary

Card 1/1 ; Pub 137-20/22

Author : Vylegzhanin, A. F.

Title : Carriers of paratyphoid bacteria among slaughtered cattle

Periodical : Veterinariya, 9, 57-58, Sep 1954

Abstract : Low resistance to disease has been observed in cattle that were brought up on farms where, due to poor soil, grasses are deficient in mineral content. Such cattle are more apt to be carriers of typhoid bacteria than those that have been well fed and properly taken care of. This conclusion was reached after serological and bacteriological examination of meat from 1,450 slaughtered cattle from farms of various regions. This study was prompted by the fact that meat of apparently healthy cattle may harbor bacteria that cause food poisoning in people and it is impossible to subject all slaughtered cattle to bacteriological examination.

Institution : Dagestan Agricultural Institute

Submitted :

VILEGZHANIN, A.F.

USSR/Microbiology - Sanitary Microbiology F-3

Abs Jour : Referat Zhurn - Biol. No 16, 25 Aug 1957, 68527

Author : Vilegzhanin, A.F.
Title : Influence of Animal Starvation on the Seeding of Carcasses and Internal Organs by Intestinal Microflora.

Orig Pub : Tr. Dagestansk. S.-Kh. In-ta, 1956, 8, 79-80

Abstract : The experiments were conducted on 33 heads of large horned cattle held without feeding for 2-168 hours and longer prior to slaughter. The bacteriological examination of carcasses and internal organs was conducted for coli-aerogenes and paratyphus flora by the OST 36 method using storage media. The minimal seeding was observed in animals who were starved 24 hours, and from 48 hours of starvation on it gradually increased. The internal organs of animals starved for 168 hours were seeded by coliaerogenes microbes in 100% of the cases. In carcasses of animals starved for 2-48 hours paratyphoid microbes were not

Card 1/2 - 38 -

VYLEGZHANIN, A.I.

Diagnostic and prognostic significance of the Aschheim-Zondek reaction in hydatid mole and chorionepithelioma. Akush.gin., Moskva No.4:24-29 July-Aug 51. (CLML 21:1)

1. Doctor Medical Sciences (Kiev).

VYLEGZHANIN, A.I.

Hypertension and pregnancy. Akush. gin. no.6:7-13 Nov-Dec 1952. (CIML 23:4)

1. Doctor Medical Sciences. 2. Of the Department of Pathology of Pregnant Women, Ukrainian Institute of Clinical Medicine (Director -- Academician N. D. Strazhesko, deceased), Kiev.

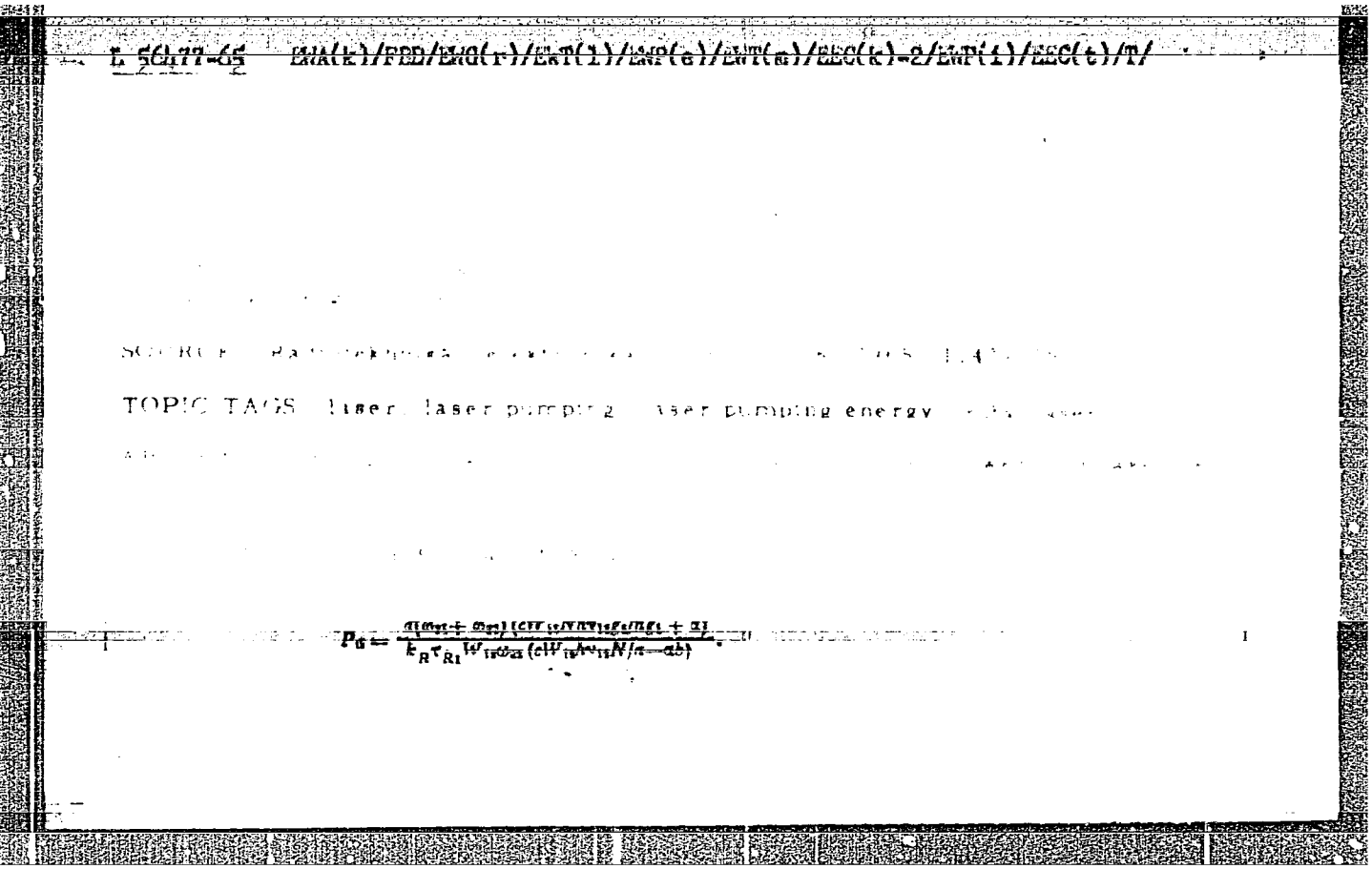
VYLEGZHANIN, A.I.; BONDAR, O.P.

Treatment of persistent vomiting in pregnancy. Akush. gin. no. 1: 32-35 Jan-Feb 1953. (CLML 24:2)

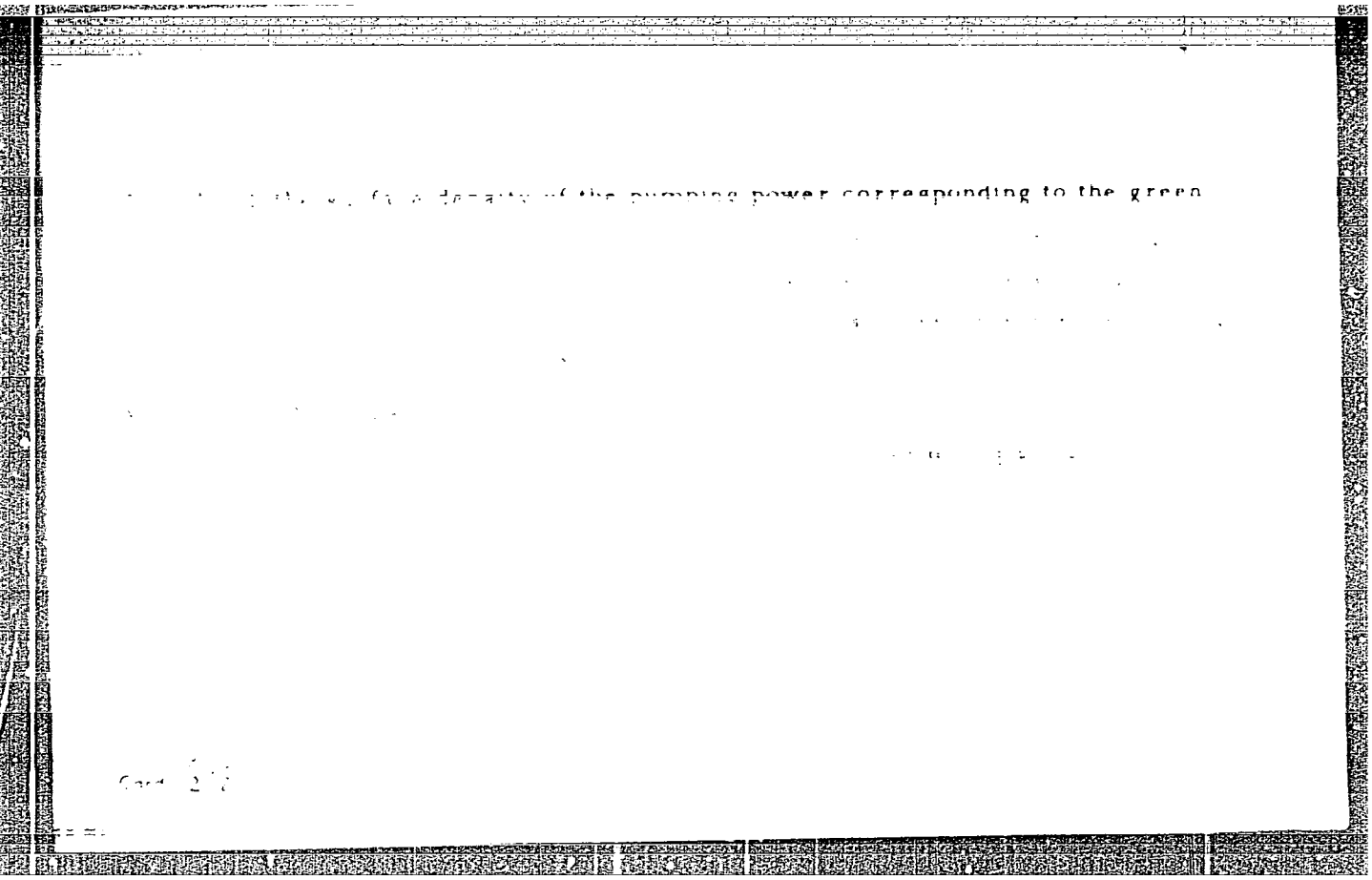
1. Doctor Medical Sciences for Vylegzhanin. 2. Of the Department of the Pathology of Pregnant Women, Ukrainian Institute of Clinical Medicine (Director -- Academician N. D. Strashesko, deceased).

VYLEGZHANIN, D.N.; ZELIKMAN, M.Kh.

Threshold of the generation of a ruby laser taking into account pumping energy dissipation in the crystal. Radiotekh. i elektron. 10 no.6:1147-1150 Je '65. (MIRA 18:6)



TOPIC TAGS: laser, laser pumping, laser pumping energy



L 26385-66 EEC(k)-2/EWP(k)/EWT(1)/EWT(m)/T/EWP(1)/EWP(e) IJP(c) WH/WG/JD/JG

ACC NR: AP6012499 SOURCE CODE: UR/0181/66/008/004/1269/1271

42
B

AUTHOR: Vylegzhanin, D. N.

ORG: Physicotechnical Institute, Moscow (Fiziko-tekhnicheskiy institut) 21

TITLE: Phenomenological calculation of the probabilities of spin lattice relaxation of chromium ions in corundum 15

SOURCE: Fizika tverdogo tela, v. 8, no. 4, 1966, 1269-1271

TOPIC TAGS: spin lattice relaxation, chromium, corundum

ABSTRACT: The author compares the quantum mechanical method for calculating the Hamiltonian of spin lattice interaction with the phenomenological method for calculating the Hamiltonian of spin phonon interaction as a means of determining the probabilities of spin lattice relaxation of trivalent chromium ions in Al_2O_3. The formulas derived are used for calculating the relaxation probabilities for corundum in a constant magnetic field of 4000 gauss directed perpendicular to the axis of the crystal. The resultant data show close agreement. Orig. art. has: 1 table.

SUB CODE: 20/ SUBM DATE: 19Oct65/ ORIG REF: 002/ OTH REF: 001

Card 1/1

VYLEGZHANIN, F.A.

Mechanization and automatization of production processes in assembly shops. Mashinostroitel' no.8:9-14 Ag '59. (MIRA 12:11)

1. Glavnyy tekhnolog Uralmashzavoda.
(Sverdlovsk--Machine tools) (Sverdlovsk--Automatic control)

25(5) SOV/117-59-8-14/44

AUTHOR: Vylegzhanin, F.A., Chief Technologist

TITLE: The Mechanization and Automation of Work Processes in the Machine Assembly Shops

PERIODICAL: Mashinostroitel', 1959, Nr 8, pp 9-14 (USSR)

ABSTRACT: Efficiency and mechanization measures in the assembly shops of the Uralmashzavod are described. They include "group processes" of S.P. Mitrofanov. The following equipment is listed: multiple-spindle drilling heads, a device for the rounding off and grinding of convex and concave spheres, used on lathes (Figure 1); hydraulic copying lathe supports; hydraulic clamps for attaching work on machine tools; pneumatic vices on milling and drilling machines; pneumatic self-centering turret lathe chucks; a special device for the mechanical cleaning of bolts (Figure 2), a pneumatic device for compressing the hook springs of drilling rigs

Card 1/3

The Mechanization and Automation of Work Processes in the Machine Assembly Shops

(it consists of a table, four supports, two pneumocylinders and a guiding ring); a pneumatic wrench (Figure 4); a pneumatic wrench for the "M64" nuts for the assembly of springs on crushers, with maximum torque of 25 thousand kg/cm (Figure 5); a pneumatic device for pressing the terminals onto cable ends (Figure 6); shears for cutting out gaskets of different shapes (Figure 7). Much work has been done at the plant to create its own specialized transfer and semiautomatic machine tools. Two examples are listed: a six-spindle machine for drilling in drilling rig parts (Figure 8); a vertical semiautomatic drilling machine for flanges. The table of this machine permits automatic division into 4, 6, 8, 10, 12 drill hole spaces. Nonautomatic division is possible into 2,3,5 spaces. Machine tools of old types are being modernized to increase their power and speed.

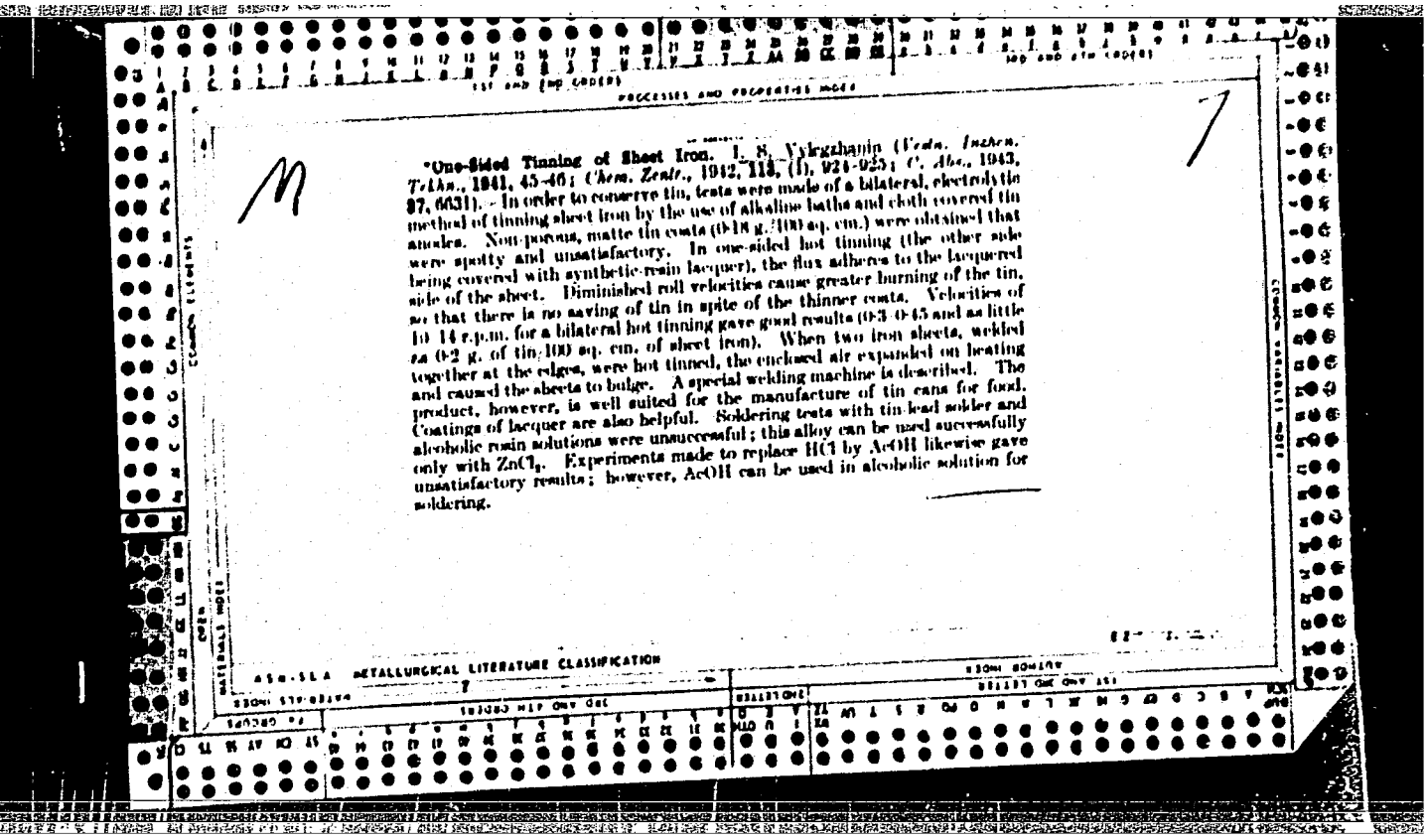
SOV/117-59-8-14/44

The Mechanization and Automation of Work Processes in the Machine Assembly Shops

The paths of vertical boring and turning machines and planing machines are being lined with "ZAM" alloy or textolite. There are 5 diagrams and 4 photos.

ASSOCIATION:Uralmashzavod.

Card 3/3



One-Sided Tinning of Sheet Iron. I. S. Vylegzhanin (*Vestn. Inzhen. Tekhn.*, **1941**, 45–46; *Chem. Zentr.*, **1942**, **113**, (I), 924–925; *C. Abs.*, **1943**, **37**, 6631). — In order to conserve tin, tests were made of a bilateral, electrolytic method of tinning sheet iron by the use of alkaline baths and cloth covered tin anodes. Non-porous, matte tin coats (0·18 g./100 sq. cm.) were obtained that were spotty and unsatisfactory. In one-sided hot tinning (the other side being covered with synthetic-resin lacquer), the flux adheres to the lacquered side of the sheet. Diminished roll velocities cause greater burning of the tin, so that there is no saving of tin in spite of the thinner coats. Velocities of 10–14 r.p.m. for a bilateral hot tinning gave good results (0·3–0·45 and as little as 0·2 g. of tin/100 sq. cm. of sheet iron). When two iron sheets, welded together at the edges, were hot tinned, the enclosed air expanded on heating and caused the sheets to bulge. A special welding machine is described. The product, however, is well suited for the manufacture of tin cans for food. Coatings of lacquer are also helpful. Soldering tests with tin-lead solder and alcoholic rosin solutions were unsuccessful; this alloy can be used successfully only with $ZnCl_2$. Experiments made to replace HCl by AcOH likewise gave unsatisfactory results; however, AcOH can be used in alcoholic solution for soldering.

USSR / Farm Animals. General Problems. Q-1

Abs Jour: Ref Zhur-Biol., No 12, 1958, 54674.

Author : Vylegzhanin, M. Z.
Inst : Not given.
Title : Changes in the Activity of Carbonic Anhydrase of the Blood in Farm Animals in Relation to Age.

Orig Pub: Tr. In-ta biol. Ural'skiy fil. AN SSSR, 1957, vyp. 4, 78-83.

Abstract: The carbonic anhydrase of the blood of cattle, horses, swine and dogs was studied. The highest activity of the carbonic anhydrase in cattle was observed at the age of three months (4.44 units) and at the age of eight years (4.91 units); the lowest - at the age of two years (1.85 units). The activity of the carbonic anhydrase does not depend directly on the number of erythrocytes and on the Hb content of the blood. The author

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1

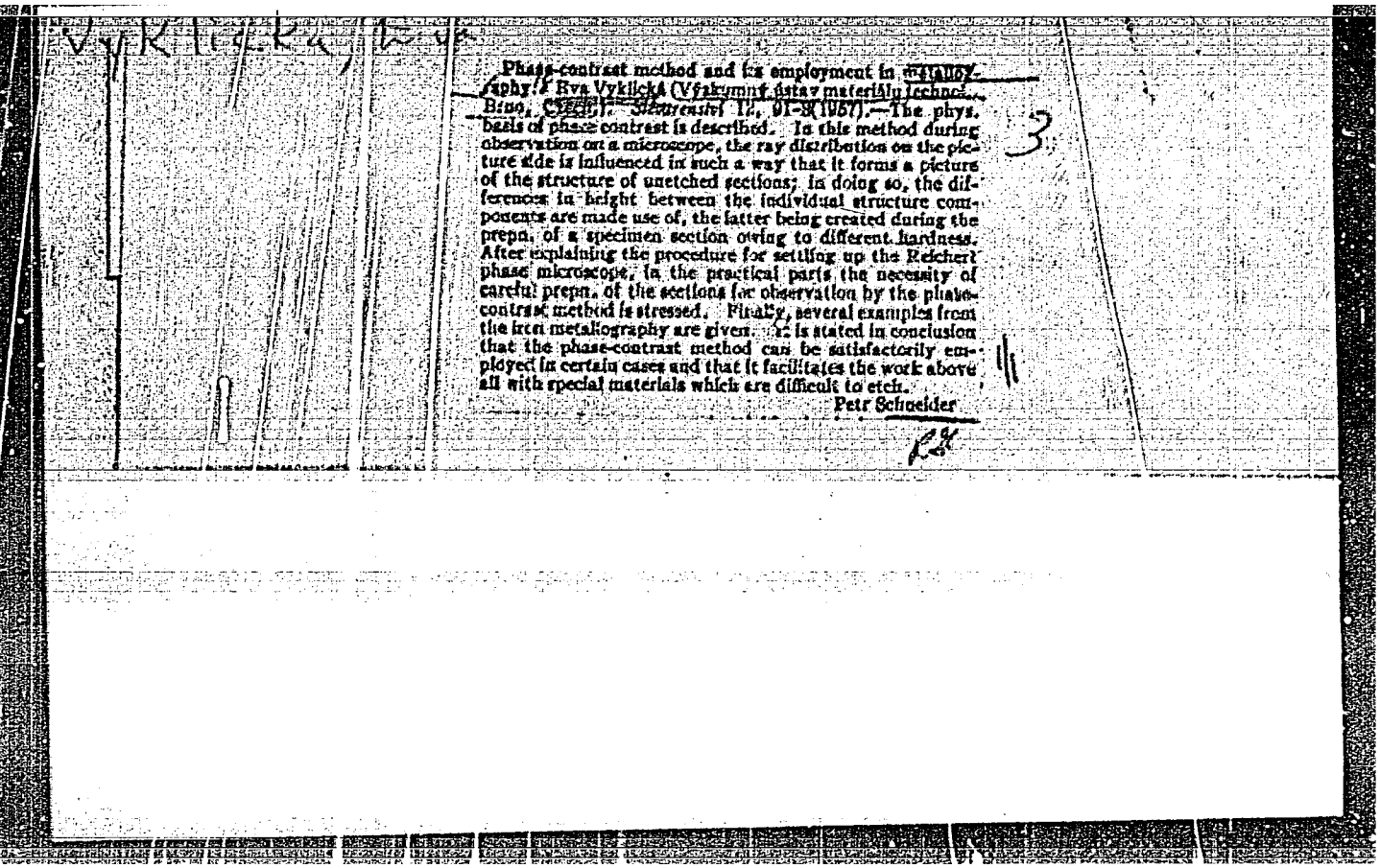
[illegible] age of 1½-2 years, and the minimum activity (0.21-0.35) at the age of 2-7 days. The carbonic anhydrase in horses of all ages was characterized by a very low activity and was comparatively less variable in relation to age.

Card 2/2

VYLEGZHANIN, M. Z.

"Cartonic Anhydrase Activity in the Blood of Domestic Animals." Cand Biol Sci, Ural State U, Sverdlovsk, 1953. (RZhBiol, No. 2, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SC: Sum. No. 556, 24 Jun 55



Phase-contrast method and its employment in metallography. Eva Vykická (Výzkumný ústav materiálu techno... Brno, Czech.). *Strojírenství* 17, 91-3(1967).—The phys. basis of phase contrast is described. In this method during observation on a microscope, the ray distribution on the picture side is influenced in such a way that it forms a picture of the structure of unetched sections; in doing so, the differences in height between the individual structure components are made use of, the latter being created during the prepn. of a specimen section owing to different hardness. After explaining the procedure for setting up the Reichert phase microscope, in the practical parts the necessity of careful prepn. of the sections for observation by the phase-contrast method is stressed. Finally, several examples from the iron metallography are given. It is stated in conclusion that the phase-contrast method can be satisfactorily employed in certain cases and that it facilitates the work above all with special materials which are difficult to etch.

Petr Schneider

NOVOTNY, I.; VYSKOCIL, F.; VYKLICKY, L.; BERANEK, R.

Potassium and caffeine induced increase of oxygen consumption in frog muscle and its inhibition by drugs. Physiol. Bohemoslov. 11 no.4:277-284 '62.

1. Institute of Zoology, Charles University, Prague; Institute of Physiology, Czechoslovak Academy of Sciences, Prague.
(TISSUE METABOLISM) (POTASSIUM) (CAFFEINE)
(MUSCLES) (PHYSOSTIGMINE) (PROCAINE)
(PHENOBARBITAL)

SKORPIL, V., Dr.; VYKLICKY, L., Dr.

Hemibalism. Cesk. neur. 19 no.2:130-134 May 56.

1. Z neurologicke kliniky v Plzni, prednosta prof. Dr. V. Pitha.
(CHOREA,
hemibalism (Cz))

VYKLICKY, L.

CZECHOSLOVAKIA/Human and Animal Physiology. Neuro-Muscular Physiology. T

Abs Jour: Ref Zhur-Biol., No 8, 1958, 36802.

Author : Vyklicky, L., Katslovia, J.
Inst :
Title : Data of Electromyographic Investigation of Some Masticatory Muscles under Physiological Conditions.

Orig Pub: Ceskosl. Stomatol., 1957, No 2, 39-46.

Abstract: EMG's of masticatory muscles at a rate 125 cm/sec were investigated. The mean duration of the action potentials averaged 5.3 msec for the temporal muscle, 4.6 msec for the masseter, 4.3 msec for the internal pterygoid muscle during the closing of the jaws, and 4.7 msec during mastication. The mastication muscle

Card : 1/2

SCHWARTZOVA, K., Dr.; VYKLICKY, L., Dr.

Polyneuritis in hematoporphyrinuria. Cesk. neur. 20 no.3: 188-194 May 57.

1. Neurologicka klinika v Plzni, prednosta prof. Dr. V. Pitha.
(PORPHYRINS, in urine
hematoporphyrinuria, with polyneuritis, electromyography (Cz))
(POLYNEURITIS, diag.
electromyography in case with hematoporphyrinuria (Cz))

VYKLICKY, L.

FANTIS, S.; VYKLICKY, L.

Central form of Recklinghausen's disease with multiple meningiomas.
Cesk. neur. 20 no.5:335-341 Sept 57.

1. Histologicka laborator fysiolog. odd. biologickeho ustavu CSAV
St. psychiatr. lecebna v Dobranech Neurologicka klinika v Plzni.
(NEUROFIBROMATOSIS, compl.
multiple meningiomas (Cz))
(MENINGIOMAS, compl.
multiple with neurofibromatosis (Cz))

VYKLICKY, Ladislav

Syndrom Canalis Carpi. Cesk. neur. 21 no.3:211-215 May 58.

1. Neurologicka klinika v Plzni, prednosta prof. Dr. V. P. Pit'ha.
(WRIST, dis.
median nerve lesion in carpal tunnel, case reports (Cz))
(NERVES, MEDIAN, dis.
lesions in carpal tunnel, case reports (Cz))

VYKLICKY, L.

Effect of tonicity of the muscle on monosynaptic reflexes. Cesk. fysiol. 8 no.4:328 July 59.

1. Neurologicka klinika lek. fakulty KU, Plzen.
(MUSCLE, physiol.) (REFLEX, physiol.)

VYKLICKY, L.

Reflex reactivity to electrical stimulation of mixed peripheral nerves of the upper extremity in man. Cesk. fysiol. 9 no.1:64-65 Ja 60.

1. Neurologicka klinika KU, Plzen.
(NERVOUS SYSTEM physiol.)
(ELECTROMYOGRAPHY)

SKORPIL,V.; VYKLICKY,L.

Effect of largactil on the EMG in lesions of the motor system.
Cesk. neur. 23 no.1/2:38-42 Ja '60.

1. Neurologicka klinika v Plzni, prednosta prof. V. Pitha.
(CHLORPROMAZINE pharmacol.)
(MOVEMENT DISORDERS diag.)
(ELECTROMYOGRAPHY)

HNIK, P.; BERANEK, R.; VYKLICKY, L.; ZELENA, J.

Sensory outflow from chronically tenotomized muscles. Physiol. bohemoslov. 12 no.1:23-29 '63.

1. Institute of Physiology, Czechoslovak Academy of Sciences, Prague.
(TENDONS) (MUSCLES) (ELECTROPHYSIOLOGY)

BERANEK, R.; HNIK, P.; VYKLICKY, L.; ZELENA, J.

Facilitation of the monosynaptic reflex due to long-term tenotomy.
Physiol Bohemoslov 10 no.6:543-552 '61.

1. Institute of Physiology, Czechoslovak Academy of Sciences, Prague.
(TENDONS physiol) (REFLEX)

VYKLICKY, L., LEDINSKY, Q.

Electromyographic findings in pressure paralysis of the ramus volaris of the hand and a contribution to surgical treatment. Cesk. neur. 24 no.3:147-151 My '61.

1. Neurologicka klinika KU v Plzni, prednosta prof. dr. V. Pitha Neurochirurgicke oddeleni I. chirurgicke kliniky KU v Plzni, prednosta doc. dr. K. Domansky.

(ELECTROMYOGRAPHY) (ULNAR NERVE diseases)

L 2049-66
ACCESSION NR: AP5027366 CZ/0053/65/000/001/0001/0013

AUTHOR: Vyklicky, L.

16
13

TITLE: Presynaptic inhibition

SOURCE: Ceskoslovenska fysiologie, no. 1, 1965, 1-13

TOPIC TAGS: neurology, central nervous system, reflex activity

Abstract: Presynaptic inhibition in relation to activity of the CNS is discussed. The influence of polarization of the terminals of nervous filaments upon the amplitude of the action potential, and its postsynaptic effect is described. Methods of studying presynaptic inhibition in the spinal cord, changes in potential on the surface of the spinal cord after excitation of afferent fibers of group Ia, potentials and reflexes of dorsal roots are discussed. Testing of excitability of muscle filaments of afferent fibers, presynaptic inhibition of afferent fibers of flexural reflex, supraspinal regulation of presynaptic inhibition are evaluated. Intraspinal pathways leading to reflexes causing depolarization of primary afferent filaments are described.

Card 1/2

L 2049-66
ACCESSION NR: AP5027366

Influence of drugs on presynaptic inhibition, and the physiological importance on the presynaptic inhibition are discussed.

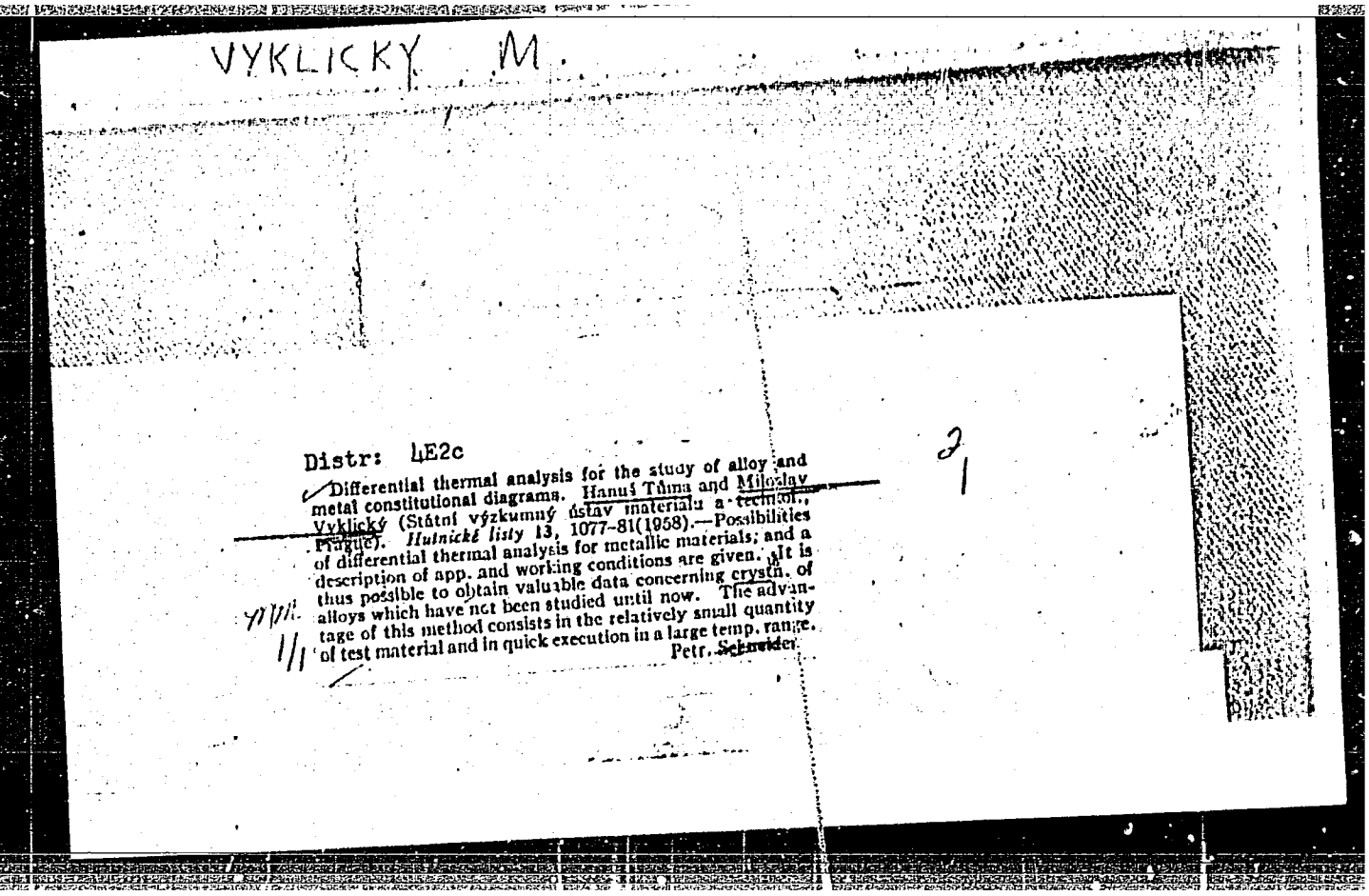
Orig. art. has 10 figures.

ASSOCIATION: Fysiologicky ustav CSAV, Prague (Physiological Institute, CSAV)

SUBMITTED: 090ct64 ENCL: 00 SUB CODE: LS

NO REF SOV: 003 OTHER: 089 JPRS

Card 2/2



VYKLICKY M.

Distr: 4E2c

Differential thermal analysis for the study of alloy and metal constitutional diagrams. Hanuš Tůma and Miloslav Vyklický (Státní výzkumný ústav materiálu a technol., Prague). *Hutnické listy* 13, 1077–81(1958).—Possibilities of differential thermal analysis for metallic materials; and a description of app. and working conditions are given. It is thus possible to obtain valuable data concerning crystn. of alloys which have not been studied until now. The advantage of this method consists in the relatively small quantity of test material and in quick execution in a large temp. range.
Petr. Schneider

Vyklicky, M

CZECHOSLOVAKIA / Chemical Technology. Chemical Products and Their Applications. Corrosion. Corrosion Control. H

Abs Jour: Ref Zhur-Khimiya, No 9, 1959, 31674.

Author : Vyklicky, M., Prenosil, B., Tuma, H.
Inst : Not given.
Title : Oxidation of Fe-Al-C Alloys.

Orig Pub: Hutnicke listy, 1958, 13, No 6, 490-496.

Abstract: The results of studying the oxidation of Fe-Al-C alloys, with a different content of Al and C at a temperature range of 900-1500°, indicated that, after the initial uniform oxidation, some alloys subjected to analysis exhibited an anomalous (A) oxidation. In the A oxidation, blisters were formed on the surface of metals, due to the destruction of the initial protective film of oxidation. In places where the blisters took place, oxidation proceeded faster than in the parent metal. It was established that, in the A oxidation, the usual laws pertaining to the development of protective oxidized films do not apply. The duration of the initial uniform oxidation is reduced by a temperature rise, an increased content of C in the alloys and a decreased content of Al. The metallographic investigations of the parent metal under the oxidized film indicated that the destruction of the initially formed oxidized film is connected with volume changes resulting from the transformation of the α-phase into the γ-phase. However, the transformation

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Card 2/3

VYKLICKY, M.

Weldability of 17% chrome steel with titanium addition. p. 299.

ZVARANIE. (Ministerstvo hutneho prymyslu a rudnych bani a Ministerstvo strojarenstva)
Bratislava, Czechoslovakia. Vol. 8, no. 6, June 1959.

Monthly list of East European Accessions (EEIA) Vol. 9, no. 1, Jan. 1960.

Uncl.

B-8

COUNTRY : Czechoslovakia
CATEGORY :

ABS. JOUR. : RZKhim., No. 21 1959, No. 74215

AUTHOR : Vyklicky, M. and Tuma, H.
INST. : Not given
TITLE : Crystallization of Commercial Fe-Al-C Alloys in the α -Solid Solution Region

ORIG. PUB. : Hutnicki Listy, 14, No 2, 118-127 (1959)

ABSTRACT : Differential thermal analysis and metallographic analysis were used in the investigation of the phase diagram of the system Fe-Al-C in the region 15-30% Al. α -solid solution was found throughout the temperature range investigated, and in the presence of C the ϵ -phase, graphite, and Al_4C_3 were also observed.

From authors' summary

CARD: 1/1

Isolation of Structural Components in Fe-Al-C Alloys

adequate for the entire range of the chemical composition of specimens in which the sought structural components (primarily the ε-phase) occur. For isolating the aluminium carbide Al_4C_3, which dissolves in water, an isolation method was evolved which which was based on dissolving the metallic component of the alloy in a waterless solution of bromine in metal acetate. There are 8 figures, 5 tables and 5 references, of which 1 is English and 4 Czech.

ASSOCIATION: Státní výzkumny ústav materiálu a technologie, Praha (State Research Institute for Materials and Technology, Prague)

81797

18.1130

Z/034/60/000/09/001/004
E073/E535

AUTHOR: Vyklický, Miloslav, Engineer

TITLE: Stainless Austenitic Chromium-Nickel Steels with Molybdenum and Copper

PERIODICAL: Hutnické listy, 1960, No.9, pp.671-679

TEXT: Classical austenitic steels (of the 18/8 type) are unsuitable for operation in certain branches of the chemical industry where sulphuric acid occurs in various concentrations. Due to price and scarcity under Czech conditions, steels with high contents of chromium and nickel (of the type containing 21% Cr, 38% Ni, 5% Mo) cannot be used on a large scale. The aim of the author, therefore, was to verify the possibility of using economy austenitic alloy steels containing Mo and Cu as a substitute for the above mentioned type of high alloy steel. In the first part of the paper literary data on the influence of Mo and Cu on the properties of austenitic Cr-Ni steels are summarised. Published results indicate that Mo and Cu have a favourable influence on the behaviour of austenitic steels, particularly in media containing sulphuric acid. Pospíšil (Ref.1) found that in

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Stainless Austenitic Chromium-Nickel Steels with Molybdenum and Copper

hydrochloric acid addition of molybdenum to steel brings about a worsening of the corrosion behaviour of the steel, however, at higher nickel contents addition to molybdenum improves the resistance to corrosion of Cr-Ni steels. In the experiments described in this paper eleven heats were produced by means of a 20 kg high frequency furnace with an acidic lining. Since, according to literary data the optimum chemical composition of such alloys from the point of view of corrosion resistance lies between 18 and 25% Cr and 18 and 25% Ni, a steel of the type containing 24% Cr and 18% Ni was chosen for the experiments, using various quantities of Mo and Cu additions. A second group of favourable results were obtained on steels containing 18% Cr and 8% Ni with various Mo and Cu additions. The full chemical compositions of the melts from which the specimens were made are entered in Table 5. In the experiments the Czech steels ČSN N7 252 (Poldi AKOR) and ČSN 17345 (Poldi AKV Extra) in the as-cast and in the worked condition were used as reference

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Stainless Austenitic Chromium-Nickel Steels with Molybdenum and Copper

specimens. Main attention was paid to resistance to corrosion in hydrochloric acid of 5, 15 and 20% concentration at room temperature and 5% concentration at 80°C. The results obtained for specimens after a testing time of 480 hours are plotted in Fig.11. Following the laboratory experiments, semi-production scale experiments were continued on steels of two composition of the types Cr24Ni18Mo2Cu4 and Cr18Ni18Mo2Cu4, respectively. The first of these was chosen on the basis of the laboratory results, the second was chosen primarily on the basis of published data. The chemical analyses of the steels used in these experiments are entered in Table 4. The results are described in considerable detail and can be summarised thus:
1) Both alloys can be hot and cold worked;
2) the mechanical properties of both alloys do not differ greatly from those of current grades of austenitic 18/8 steels;
3) the resistance to corrosion of the alloy of the type Cr21Ni18Mo3Cu4 in the investigated media, primarily in H_2SO_4 and

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Z/034/60/000/09/001/004
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Stainless Austenitic Chromium-Nickel Steels with Molybdenum and Copper

HCl, were better than or equal to those of the considerably higher alloyed material of the type Cr21Ni38Mo5.5 (ČSN N7 252 - Poldi AKOR). The alloy of the type Cr18Ni18Mo2Cu3 proved to have a better resistance to corrosion in a number of media than the at present marketed steel Cr18Ni8Mo2 (ČSN 17 345 - Poldi AKV Extra); according to literary data, the composition of the alloy Cr21Ni18Mo3Cu4 is such that it is not prone to intercrystallite corrosion. There are 20 figures, 10 tables and 13 references: 5 Czech, 5 Soviet and 3 English.

ASSOCIATION: Státní výzkumný ústav materiálu a technologie, Praha (State Research Institute for Materials and Technology, Prague)

SUBMITTED: June 9, 1960

4

Card 4/4

VYKLICKY, M.

83250

Z/032/60/010/010/002/002
E073/E535

18 1150 for 2308 only
26.2122

AUTHOR: None Given

TITLE: From the Reports of Research Institutes

PERIODICAL: Strojírenství, 1960, Vol.10, No.10, pp.797-798

TEXT: The following reports are given:

R. Parakí: "Spectral determination of the aluminium content in alloys".

Detailed description of the development of quantitative analytical methods for spectral determination of the aluminium content in Nimonic type high temperature alloys. Information published in literature has been evaluated and an analytical method is proposed. The developed method relates to determining aluminium contents between 2 and 7%.
1959, Prague: SVÚMT Z-59-757.

F. Khol: "Determination of large defects of blooms at temperatures up to 1200°C by means of γ-radiation".

Results are described of experimental verification of phenomena occurring during measurement of the weakening of the γ-radiation of Co60 during its passage through steel caused by the influence of
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temperature and also the use of a comparison method of measuring by means of two scintillation counters and the influence of the scattered radiation on the sensitivity of this method. The results are applied to improving the accuracy of measuring equipment for monitoring the dimensions of blooms at temperatures up to 1200°C.
1959, Prague: SVÚMT Z-59-777.

V. Kraus: "Investigation of the cooling of blades from the tempering temperature".

The report relates to the tendency of the material used for the manufacture of turbine blades to develop temper brittleness. It was found that the isothermal composition in this material can be disregarded under normal conditions. The anisothermal component manifests itself clearly during slow cooling so that for ensuring optimum toughness it is advisable that the cooling from the tempering temperature should be as rapid as possible in the critical temperature range of 700 to 300°C. An optimum technology for cooling from the tempering temperature is described.
1960, Prague: SVÚMT Z-59-804.
Card 2/6

K. Löbl, M. Vyklický: "Introduction of new economy materials into production".

The results are described of introducing into production some new materials developed by the Department for Refractory and Acid Resistant Materials. Primarily the new materials are hard alloys (cermets) with a low cobalt content for hard facing and hard alloys for operation at very high temperatures and pressures. Furthermore, a further application of the alloy Pyroferal is described and a nickel-free stainless chromium steel ČSN 17 041 with an addition of titanium is dealt with.
1959, Prague: SVÚMT Z-59-806.

M. Vyklický: "Investigation of refractory and corrosion-resistant chromium-base alloys".

Some important problems relating to the practical utilisation of chromium steels have been solved. The influence of heat treatment and of long duration annealing on the mechanical properties, the change in corrosion resistance and the specific electric resistance after such heat treatment has been determined and the
Card 3/6

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E073/E535

From the Reports of Research Institutes

problem of reliable isolation of carbide and intermetallic phases
has been solved. The report also deals with the problem of
correct choice of steel for thermal power stations and finally,
a new chromium steel is proposed which is alloyed with molybdenum
and copper and is intended as a substitute for the type 18/8 CrNi
steel.
1959, Prague: SVÚMT Z-59-738.

O. Scholz: "Investigation of material for turbine blades and
its heat treatment".
On the basis of experimental heats and heat treatment experiments,
the optimum composition of steels of the type containing 13% Cr
and Ni and the heat treatment of such steels are proposed.
Variants are also given of the composition of a chromium steel of
high mechanical strength alloyed with a higher content of nickel
or molybdenum and having a low carbon content. On the basis of
laboratory experiments contained in a separate report and on the
basis of practical experience, directives have been issued on
moulding and casting and the casting properties of the steels
have been determined.
1959, Prague: SVÚMT Z-59-783.
Card 4/6

M. Vyklický: "Investigation of the properties of inoculated
("modified") Fe-Cr-Al type alloys".
The report is a continuation of an earlier report "Malleable
refractory chromium steel with addition of aluminium for applica-
tions up to 1200°C" (Report Z-57-376), whereby the present report
is concerned with improving the mechanical properties of the
developed steels at room temperature. Seventeen different
inoculated heats were tested and the most suitable was found to be
the one containing about 10% Mn, which contrary to the original
ternary Fe-Cr-Al type, does not become brittle at elevated
temperatures.
1959, Prague SVÚMT

M. Vystrčil: "Shaping and checking of forgings from Nimonic type
alloys".
Available literary data are summarized on shaping of Nimonic type
alloys in view of the fact that some technological problems
particularly forging and pressing of large turbine blades from
such materi[illegible], have not been solved in Czechoslovakia and these
Card 5/6

problems cause difficulties in using such alloys in gas turbines
produced in Czechoslovakia. At the end of the report destruction-
free testing is briefly dealt with.
1959, Prague: SVÚMT Z-59-786.

M. Vyklický: "Chromium steel ČSN 17 041 with the addition of
titanium".
Investigation of two heats of steels of the type ČSN 17 041 + Ti
has shown that this steel has certain advantages compared to
steel without titanium. The mechanical properties of this steel
are approximately equal to those of steel without titanium.
However, annealing of the steel with titanium is appreciably
simpler and its weldability is considerably better. A disadvantage
is that it is more difficult to polish.
1960, Prague: SVÚMT Z-59-808.

Card 6/6

Z/056/62/019/008/003/007
I037/I237

AUTHOR: Vyklický, M.

PERIODICAL: Přehled technické a hospodářske literatury. Hutnictví a strojírenství v. 19, no. 8, 467 abstract HS62-5930 (1960, Praha SVÚMT STK 129019)

TITLE: Glow-resistant resistive materials of the type Fe-Cr-Al

TEXT: Tracing of glow-resistance of nine experimental melts of the type Fe-Cr-Al. Glow-resistance o. alloys of the basic type: Properties of the alloys, after the fire-resistance test. Tests of semi-conducting alloysl The influence of long lasting heating on the properties of semi-conducting alloys. Modified alloys of Fe-Cr-A and their mechanical properties; influence of long heating on the latter. The most suitable is the alloy containing over 17% Cr and about 5% Al. After long heating, the alloys having Mn and partly also Ni additivies, proved to be best. There are 2 photos, 6 microphotos, 19 diagrams, 10 tables, and 19 references From collection(p. 137–166). Materialovy sbornik (Material collection) 1960, Part II.: Glow-proof, glow-resistant and corrosion resistant steels and alloys.

[Abstracter's note: Complete translation.]

Card 1/1

S/137/62/000/009/019/033
A006/A101

AUTHOR: Vyklický, Miloslav

TITLE: Iron-base scale and corrosion resistant welding alloy

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 9, 1962, 78, abstract 9I478 P (Czechosl. Patent no. 100211 of July 15, 1961)

TEXT: A scale and corrosion resistant alloy is proposed having higher mechanical properties than the widely used Fe-Cr alloy (0.1% C, 17% Cr, 0.1% Cu, 25% Cr). It can be well machined and welded. The proposed alloy contains up to 0.4% C, 6 - 18% Mn, 25 - 35% Cr, the rest Fe. The microstructure of the alloy is mainly ferritic: carbides, σ- and γ-phases occupy $\leq$10% of the surface. The alloy is magnetic. Mechanical properties of the proposed alloy (0.1% C, 26% Cr, 10% Mn, the rest Fe) are compared with alloys being used at present. Contrary to the alloys in use (for instance with 0.1% C and 25% Cr) extended annealing at high temperatures (1,000°C, 300 hours) does not cause brittleness in the new alloy. Its properties can be improved by the addition of Ti, Nb and Zr, either separately or in combination to amounts up to 3%. The alloy is recommended for

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S/137/62/000/009/019/033
A006/A101

Iron-base scale and corrosion resistant welding alloy

the production by pressure or cast working of furnace parts, and thermal or thermochemical processing of recuperator parts.

O. Rymashevskiy

[Abstracter's note: Complete translation]

Card 2/2

Z/034/62/000/001/010/011
E073/E535

AUTHOR: Vyklický, M., Engineer

TITLE: Heat and corrosion resistant iron-base alloy
Czechoslovak Patent Application 18d, 1/30, PV 2567-61,
dated April 26, 1961

PERIODICAL: Hutnické listy, no.1, 1962, 64

TEXT: The alloy is suitable for manufacturing equipment for the food processing industry, special furnace components etc. The structure of the alloy contains 20 to 60% of the austenitic phase. The subject matter of the invention is in the fact that the alloy contains a maximum of 0.2% C, 8 to 12% Mn and 18 to 20% Cr.

[Abstractor's note: Complete translation.]

Card 1/1

Z/034/61/000/003/010/011
E073/E535

AUTHOR: Vyklický, M., Engineer

TITLE: Heat Resistant and Corrosion Resistant Iron-base Weldable Alloy
Patent Application Class 18d, 1/70 PV 7055-59, dated December 5, 1959

PERIODICAL: Hutnické listy, 1961, No.3, pp.209-210

TEXT: The alloy contains a maximum of 0.4% C, 6 to 18% Mn, 25 to 35% Cr and also additions totalling not more than 3% of Ti, Nb and Zr, separately or in any combination. The alloy is particularly suitable for manufacturing components of furnaces for heat and chemical-heat treatment of steel, components of recuperators etc., manufactured by forming or casting.

[Abstractor's Note: This is a complete translation]

Card 1/1

Z/046/61/000/004/009/009
D007/D102

AUTHORS: Vyklický, M., Engineer, and Löbl, K., Engineer

TITLE: A contribution to the weldability problem of inexpensive chrome-nickel stainless steels with two-phase structure

PERIODICAL: Zváračský sborník, no. 4, 1961, 496-503

TEXT: This paper lists mechanical properties of Ni-saving, stabilized, stainless, austenitic-ferritic Cr21Ni5Ti and Cr21Ni6Mo2Ti steels which were developed in the USSR to replace the classical CrNi and Ti-stabilized steels used for chemical equipment etc. Since these steel types can also replace the domestic ČSN 17 246 (Poldi AKVS) and ČSN 17 347 (Poldi AKV Extra S) steels, detailed mechanical and weldability tests were made in the ČSSR. It was found that mechanical properties of these two-phase steels are strongly dependent on the Ni content, and that plastic properties improve with increasing Ni content. Compared with the classical Cr18Ni8Ti and Cr18Ni8-Mo2Ti steels, the ultimate strength and yield points are considerably higher, ductility and notch toughness are somewhat lower, and anticorrosive properties are about the same. Welding tests were made on 1-, 3-, and 20-mm

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Z/046/61/000/004/009/009
D007/D102

A contribution to the .....

sheets by the "arkatom" method (without filler material) or using E 391 electrodes, and mechanical properties of the weld metal were determined. Again, it was found that steels with higher Ni content have better ductility values, while steels with higher Mo content have somewhat lower ductilities, due to a zone of higher δ-ferrite content in the weld metal. These differences in ductility and Erichsen cupping values are most likely attributable to the total amount of austenite- and ferrite-forming elements in the heat, i. e. heats with higher contents of these additions (higher γ-phase content) also have better ductility and cupping properties. There are 2 figures, 5 tables, and 2 Soviet-bloc references. (Technical Editor: Engineer J. Zeko of the VÚZ Bratislava).

ASSOCIATION: SVÚMT Praha (SVÚMT Prague).

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2444

Z/034/61/000/008/001/005
E073/E335

18.1130

AUTHORS: Vyklický, Miloslav, Löbl, Karel, Kabrhel, Adolf, Tůma, Hanuš, Číhal, Vladimír and Pražák, Milan

TITLE: Influence of Molybdenum and Copper on the Properties of Stainless Chromium

PERIODICAL: Hutnické listy. 1961, No. 8, pp. 553 - 560

TEXT: According to data published in the literature (Ref. 2 - Copper in Cast Steel and Iron. Copper Development Association, London), high-alloy chromium steels containing 2-3% Si and 1.5-2% Cu have a high resistance to alum and are extensively used in the food-processing industry. An increased C content in chromium steels reduces their resistance to corrosion, particularly after unsuitable heat-treatment. However, low-carbon chromium steels cause difficulties in the manufacture of castings of complex shapes. Therefore, higher C contents are used and the unfavourable influence of the C content is compensated by adding Cu. Although the effect of Mo on chromium steels is known, the authors are not aware of any published information on the combined influence of Cu and Mo

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Z/034/61/000/008/001/005
E073/E335

Influence of Molybdenum ....

on the properties of chromium steels. This is in spite of the fact that such steels are being manufactured, for instance - the Czech steel Poldi-AK1BC (chemical composition: 0.12% C, 0.50% Mn, 0.25% Si, 16.15% Cr, 0.20% Mo and 1.75% Cu) and the ferritic chromium steel for use in the chemical industry, containing 0.6-0.8% C, max. 0.7% Mn, max. 2% Si, 28.0 - 30.0% Cr, 2.0 - 2.5% Ni, 2.0 - 2.5% Mo and 2.0% Cu. The authors considered it interesting to investigate the influence of Cu and Mo on the properties of chromium steel and this paper contains the results of these investigations. A total of 11 heats was produced with chemical compositions varying between the following limits: C 0.6 - 0.11%; Cu 0 - 6.11%; Cr 14.58 - 26.6% and Mo 0 - 3.91%. The heats were produced in a 20-kg high-frequency furnace, using as a charge low-carbon steel, low-carbon ferrochromium, low-carbon ferromolybdenum and copper. Of the mechanical properties only the hardness was measured. In agreement with data published in the literature, heats with higher copper contents showed a higher hardness, both

Z/034/61/000/008/001/005
E073/E335

Influence of Molybdenum ....

in the as-cast and in the annealed states; metallographic tests showed that addition of Cu brought about pronounced structural changes. The corrosion tests were carried out in a number of corrosive media, subdivided into the following groups:

A. Media with free SO_2

1. H_2SO_3; 2%; 20 °C
2. $NaHSO_3$; 5%; 20 °C

B. Organic oxides

3. lactic acid; 10%; 20 °C
4. oxalic acid; 10%; 80 °C
5. citric acid; 10%; 80 °C
6. tartaric acid; saturated solution; 80 °C
7. acetic acid; concentrated; 80 °C

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Z/034/61/000/008/001/005
E073/E335

Influence of Molybdenum ....

C. Inorganic non-oxiding acids

8. hydrochloric acid; 8%; 20 °C
9. phosphoric acid; 65%; 80 °C

D. Inorganic Oxiding acids

10. nitric acid; 65%; 80 °C .

A detailed analysis allowed grouping the time dependence of the weight loss due to corrosion into three basic groups: linear dependence (in hydrochloric acid and, in some cases, also in nitric acid at 80 °C); parabolic dependence with steepness increasing with time ($NaHSO_3$ solution) and, finally, corrosion rate decreasing with time and characterised by a curve which flattens out. The corrosion tests have shown that steel containing 25% Cr, 2% Mo and 2% Cu had the highest resistance to corrosion, which almost equalled the Czech steel CSN 17241. This type of steel was not investigated in the group of the 17% chromium steels. In the latter steel,

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24144

Z/034/61/000/008/001/005
E073/E335

Influence of Molybdenum ....

Mo improved the resistance to corrosion in solutions with free SO_2, whilst Cu improved the resistance to corrosion in organic acids. On the basis of laboratory results, SONP Kladno produced two 50-kg heats in a high-frequency furnace with chemical compositions which proved the most favourable in the laboratory tests. The compositions of these heats (in %) were as follows:

Heat	C	Mn	Si	P	S	Cr	Mo	Cu
A 3829	0.13	0.53	0.37	0.019	0.021	15.52	2.05	2.01
B 3830	0.10	0.54	0.30	0.026	0.017	24.75	1.75	1.95 .

The ingots from both heats were forged into 250 x 600 x 20 mm blanks and then rolled down to 1 mm thick sheet. These hot-rolled sheets were then used in mechanical and corrosion tests and in weldability tests. The most favourable heat-treatment for these steels proved to be the following:

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Influence of Molybdenum ....

Heat A ... 800 °C/0.5 hrs/air
" B ... 900 °C/0.5 hrs/air.

The mechanical properties of thus heat-treated steels do not differ substantially from the properties of semiferritic steels containing 17% Cr (ČSN 17041). After this heat-treatment, both heats proved satisfactory in double-bending tests; in Erichsen tests both heats achieved the value of 7.9 mm. Welding tests were carried out by arc-welding in an argon atmosphere; the weldability of Heat A was better than that of Heat B. Potentiostatic polarisation curves were determined to obtain information on the corrosion behaviour of the steels. The following conclusions were reached: Additions of 2% Mo and 2% Cu proved the most suitable. The resistance-to-corrosion of steels with 17% Cr, 2% Mo and 2% Cu is higher than the resistance-to-corrosion of the same type of steel without Mo and Cu. Very good results were obtained with steel containing 25% Cr and an addition of Mo and Cu which, for most corrosive

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Influence of Molybdenum ....

media, will have the same resistance-to-corrosion as the austenitic CrNi steel ČSN 17241. According to the achieved results, the steel with the lower Cr content can be used for less aggressive corrosion media and in cases in which the steel ČSN 17041 cannot be used owing to its lower resistance-to-corrosion or its poor weldability. Steel with a higher Cr content (Heat B) can be used as a substitute for the steel ČSN 17241 but the plasticity and weldability of this material are not as good as those of steel ČSN 17241.
There are 17 figures, 7 tables and 12 references: 6 Czech and 6 non-Czech. The four English-language references quoted are: Ref. 1 - Loring - Metals Handbook, pp. 462 - 465; Ref. 2 - (quoted in text); Ref. 3 - Saklatwalla - Dammler, Trans. Am. Soc. Steel. Treat. 15, 1929; Ref. 4 - Daniloff - The Alloys of Iron and Copper. New York and London, 1934.

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24144

Z/034/61/000/008/001/005
E073/E335

Influence of Molybdenum ....

ASSOCIATIONS: Státní výzkumný ústav materiálu a technologie v Praze (State Research Institute for Materials and Technology, Prague)
Státní výzkumný ústav ochrany materiálu G.V. Akimova v Praze (G.V. Akimov State Research Institute for the Protection of Materials, Prague)

SUBMITTED: November 28, 1960

Card 8/8

Z/032/62/012/001/007/007
E073/E335

18.1151

AUTHOR: Vyklický, M.

TITLE: Heat- and corrosion-resistant Fe-Cr-Mn alloys

PERIODICAL: Strojírenství, v. 12, no. 1, 1962, 72

TEXT: The report deals with the development of stainless and refractory Fe-Cr-Mn steel with a two-phase structure, which does not contain raw materials that are scarce in Czechoslovakia. 15 laboratory heats, containing 13 - 23% Cr and 6 - 14% Mn, were produced. After forging to 20 mm dia rods, their heat-resistance was closely studied at a temperature of 1 000 °C, the corrosion-resistance was studied in seven media and the mechanical properties were studied after forging, heat-treatment and after long-duration annealing. These results were supplemented by microstructural investigations of the alloys. It was found that in the investigated series of alloys, the steel Cr21Mn10, cast into 100-kg ingots, had the most favourable properties. After heat-treatment of 950 °C/air-quench, , this steel had considerably better mechanical properties than the

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Z/032/62/012/001/007/007
E073/E335

Heat- and corrosion-resistant ...

hitherto-used Cr-base refractory and acid-resistant steel. Its corrosion-resistance does not differ from that of Cr or even from that of austenitic Cr-Ni steels. It has a satisfactory weldability.
Research report Z-60-972, SVÚMT, Prague, 1961.
[Abstracter's note - this is a complete translation.]

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S/137/62/000/006/152/163
A057/A101

AUTHORS: Vyklický, M., Löbl, K.

TITLE: On the question of the weldability of economical chromium-nickel stainless steels with a two-phase structure

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 5, abstract 6E32 ("Zvárač. sb.", 1961, v. 10, no. 4, 496 - 503, Czechoslovakian; Russian, German and English summaries)

TEXT: Results of mechanical tests of welded samples of steel Cr21 Ni5 Ti and Cr21 Ni5 Mo2, developed as substitutes of classical Cr-Ni-steels of the type 18-8, stabilized with Ti, are presented. See EI SVP, 1962, no. 14, ref. 57.

Ye. Greyl'

[Abstracter's note: Complete translation]

Card 1/1

Z/032/62/012/004/006/007
E073/E335

18.1150

AUTHORS: Löbl, K. and Vyklicky, M.

TITLE: Investigation of chromium and chromiun-nickel stainless steels with a low carbon content (below 0.06% C)

PERIODICAL: Strojírenství, v.12, no. 4, 1962, 317

TEXT: The report deals with the technical aspect of manufacture, particularly using acid-resistant chromium and chromium-nickel steels with low (0.06%) and very low (down to 0.03%) carbon content in the chemical and food industries. The state of development of the manufacture and research of these steels outside Czechoslovakia has been investigated and laboratory and works testing of the properties of these steels has started. Base material as well as welded material and the corrosion properties have been studied and tests were carried out on increasing the sensitivity to inter-crystalline corrosion. The test mehtod has been developed in such a way as to permit comparison with steels having usual carbon contents. The obtained results are evaluated both

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Z/032/62/012/004/006/007
E073/E335

Investigation of ....

from the technical and economical points of view and the report lists possibilities of application of these steels in the Czechoslovak industry.
Research Report Z-61-991, SVÚMT, Prague, 1961.
[Abstracter's note: this is a complete translation.]

Jv

Card 2/2

VYKLICKY, M.

KOLOMB'YE, L. (Frantsiya); PLUGARZH, Ya. [Pluhar, J.] (Chekhoslovakiya); VYKLITSKIY, M. (Chekhoslovakiya); PRAZHAK, M. [Prazak, M.] (Chekhoslovakiya); CHIGAL, V.; KHEYSKANEN, K. (Finlyandiya); SKIN, K.

Reports made at the Symposium on Stainless Steel. Metalloved. i term. obr. met. no.5:51-54 My '62. (MIRA 15:5)
(Steel, Stainless--Congresses)

37476
S/129/62/000/005/010/011
E073/E335

18.1130

AUTHORS: Vyklický, M., Pražák, M., Číhal, V. (Czechoslovakia)

TITLE: Influence of alloying elements on the properties of austenitic stainless steels

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1962, 52 - 53

TEXT: By analyzing the potentiodynamic polarization curves the influence of molybdenum, copper, tungsten and silicon was investigated (individually and in various combinations) on the corrosion-resistance of Cr-Ni austenitic stainless steels, containing 18 - 22% Cr and 21 - 30% Ni. The polarization curves were recorded at room temperature for a 1 mole solution of hydrochloric acid with 0.01% KCNS added. The following were applied as a criterion of the resistance-to-corrosion: the width of the zone of immunity and the magnitude of the electrochemical potential. It was found that an increase in the nickel content within the investigated limits did not have an appreciable influence on the active state of type X20N5 (Kh20N5) steels,

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S/129/62/000/005/010/011
E073/E335

Influence of ....

alloyed with silicon, molybdenum and copper. The positive electrochemical potential increased with increasing contents of molybdenum and the range of immunity broadened. Copper had the same influence but to a somewhat lesser extent. Tungsten had no influence on the immunity range and increased only slightly the potential of the active range. After laboratory investigations, experimental heats were produced of the steel Kh24N20 (Kh24N20), which were alloyed with molybdenum and copper. Specimens of these heats were tested for corrosion-resistance in hydrochloric acid for durations of 480 hours. The steel alloyed with 5% Mo and 3.5% Cu showed the highest resistance-to-corrosion: it was higher than that of the steel type Kh21N38M5T (Kh21N38M5T). Sheets 1 and 3 mm thick were produced from the new steel and tested in 14 different media, including hydrochloric and sulphuric acids, at various concentrations and temperatures. The resistance-to-corrosion of

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Influence of ....

this steel in these media was considerably higher than that of the steel Kh18N9M2 (Kh18N9M2) and slightly better than that of the steel Kh21N38M2T (Kh21N38M2T). The new steel is very stable against intercrystallite corrosion.

[Abstracter's note: this is a complete translation.]

4

Card 3/3

27236
Z/034/61/000/010/002/002
E073/E135

18.1151

AUTHORS: Vyklický, M., Engineer, and Protiva, K., Engineer

TITLE: Iron base refractory alloy. Patent application class 18d, 1/70, PV 5817-59 dated October 10, 1959

PERIODICAL: Hutnické listy, 1961, No.10, p. 745

TEXT: The steel is intended for cast and hot or cold formed components. It contains a maximum of 0.15% C, 10-30% Cr, 4-7% Al and 6-14% Mn. Further alloying additions are Ti, Nb and Zr, used individually or in any combination totalling up to 2%. Furthermore, it contains Ta in quantities up to 5%. The alloy is particularly suitable for manufacturing resistance elements of a variety of shapes.
[Abstractor's note: This is a complete translation.]

Card 1/1

Z/032/62/012/005/004/004
E073/E535

AUTHORS: Lübl, K. and Vyklický, M.

TITLE: Economy stainless chromium-nickel steel with a two-phase (austenitic-ferritic) structure

PERIODICAL: Strojírenství, v.12, no.5, 1962, 395

TEXT: Technical report for engineering and chemical works containing information on new types of economy stainless Cr-Ni steels with possible additions of molybdenum for increasing the resistance to corrosion in the active state. For the chemical and food industries this steel can be stabilized with titanium. These steels are intended primarily as a substitute for the scarce austenitic steels ČSN 17 246 and 17 347. They can be welded using the same technology and additional materials as for classical austenitic steels. They have a two-phase, i.e. austenitic-ferritic, structure and their yield point is "twice as high". The steels are resistant to inter-crystallite corrosion. Steels with molybdenum can be used up to 300°C and the steels without molybdenum up to 400°C. By

Card 1/2

Economy stainless chromium-nickel ... Z/032/62/012/005/004/004
E073/E535

speedy introduction of these steels it will be possible to achieve considerable savings of nickel.

Research Report Z-61-930, SVÚMT, Prague, 1961

[Abstractor's note: Complete translation.]

Card 2/2

Z/034/62/000/011/001/001
E073/E335

AUTHOR: Vyklický, Miloslav, Engineer

TITLE: Chromium-manganese corrosion-resistant steel with a two-phase structure

PERIODICAL: Hutnické listy, no.11, 1962, 786-801

TEXT: To obtain a steel with satisfactory hot forming properties a steel was developed which has a predominantly single-phase (ferritic) structure at elevated temperatures but contains a high percentage of the austenitic phase after cooling down. The system Fe-Cr-Mn was chosen primarily in view of the easy availability of the alloying elements, Cr and Mn. 13 Laboratory heats with chromium contents of 13 to 23% and manganese contents of 6 to 14% were produced in the first part of the work. Two quasibinary compositions with respective constant contents of 23% Cr and 11% Mn were chosen and the mechanical properties, refractoriness, resistance-to-corrosion and structural stability were investigated after various heat treatments. Up to 18% Cr improved appreciably the corrosion-resistance in the passive state; Mn did not greatly

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Chromium-manganese ...

affect the corrosion-resistance. Detailed investigations, on the basis of the results of the preliminary tests, were made on a steel with 0.1% C, 21% Cr, 10% Mn, 0.040% P and 0.035% S. A 100 kg ingot was produced from a heat of this steel in a chromium magnesite-lines high-frequency furnace. The ingot was forged and then rolled into 1 mm thick sheet. There was no difficulty at all during hot-forming (forging and rolling), the resistance-to-forming being less than for Cr-Ni austenitic steels. The optimum heat-treatment from the point of view of the mechanical properties was: 900 to 1000°C/air-cooling. 1 mm sheet had the following properties after annealing at 900°C and air-cooling: UTS 77.0 kg/mm^2; yield point 44 kg/mm^2; δ_{10} = 38%; the impact strength was always above 10 kgm/cm^2. Annealing in the temperature range 550 to 800°C produced appreciable embrittlement, caused by the decomposition of the ferrite, followed by formation of a brittle σ-phase. Additions of V, Mo, Cu, Co and N did not appreciably affect the σ-phase formation after annealing in the temperature range 550 to 700°C. Only N affected indirectly the quantity of the σ-phase formed as a result of ferrite

decomposition. The weldability was very good; the mechanical properties of the welds were as good as the properties of the base material. The corrosion-resistance was equivalent to that of austenitic Cr-Ni steels, type Cr18Ni8. For active states nickel steels should be used. The steel studied had a high resistance-to-corrosion in organic acids; its resistance to intercrystallite corrosion was considerably better than chromium steels. There are 37 figures and 10 tables.

ASSOCIATION: SVÚMT, Prague

SUBMITTED: December 29, 1961

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39512

S/123/62/000/014/018/020
A004/A101

18.1100

AUTHOR: Vyklický, Miloslav

TITLE: Heat-resistant alloys of the FeCrAl-type

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 14, 1962, 3, abstract 14G20 ("Materiál. sb. 1960. Část 2". Statní výzkumný ústav materiálu a technol. Praha, 1960, 137 - 166, Czechoslovakian; Russian and English summaries)

TEXT: Castings were produced from 10 laboratory heats of ferro-chrome-aluminum alloys to investigate in detail their heat resistance. The most expedient alloys are those containing more than 17% chromium and some 5% aluminum. Alloys of this type show no tendency to spot oxidation and change their form only insignificantly during protracted annealing. The maximum utilization temperature of these alloys would be some 1,300°C. The mechanical properties were investigated in detail on forged rods 20 mm in diameter from the steel grades X 17 Ю 5 (Kh17Yu5) and X 24 Ю 5 (Kh24Yu5). A deficiency of these steels is their comparatively low plastic properties at 20°C which, in operation at high temperatures, sharply deteriorate. The effect of alloying elements to increase the mechanical properties

X.

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S/123/62/000/014/018/020
A004/A101

Heat-resistant alloys of the FeCrAl-type

of these alloys was studied. It was found that only manganese improves markedly the mechanical properties of the investigated alloys after protracted high-temperature annealing. Hitherto it was not possible to elucidate the causes of these changes. The investigation results will be checked under operation conditions on heating elements of electric resistance furnaces..

[Abstracter's note: Complete translation]

Card 2/2

Z/020/63/000/001/003/005
D006/D102

AUTHORS: Löbl, K., Vyklický, M., Kabrhel, A., and Šustek, A.

TITLE: Research on economical stainless austenitic-ferritic steels for service in the chemical industry

PERIODICAL: Energetika, no. 1, 1963, 54

TEXT: The paper is concerned with the problem of nickel saving in austenitic chrome-nickel steels used for production of welded machine equipment for the chemical industry. Using Soviet sources and results of own research, a total of four economical steels was developed in which nickel content was reduced practically to one half compared with the scarce steels they are to replace. The economical chrome-nickel austenitic-ferritic steels can replace the classic austenitic steels in most applications except for cases involving corrosive or active environments. Also, in designing machine equipment advantage can be taken of their better mechanical properties, especially higher yield point, as compared with the currently required chrome-nickel austenitic steels. [Abstracter's note: This is a complete translation of an abstract from the Vyskumna zprava SVÚMT (SVUMT Research Report) no. Z-61-1003, Prague, 1961.]

Card 1/1

VYKLICKY, M.; LOBL, K.; POTRUCEK, B.; KABRHEL, A.

Introduction of economical, stainless, fire-resistant steels and welding-on alloys into production. Energetika Cz 13 no.7: 386 Jl '63.

69268

Z/034/60/000/04/002/028
E073/E535

18.1150

AUTHORS: Vyklický, Miloslav, Engineer and Kabrhel, Adolf, Engineer

TITLE: Manufacture and Properties of New Iron and Aluminium Alloys

PERIODICAL: Hutnické listy, 1960, Nr 4, pp 260-266

ABSTRACT: In the first part of the paper the authors review data given in the literature, predominantly American, on the manufacture and properties of Fe-Al alloys, mainly those marketed under the trade names Alfenol, Thermenol and Ferral. In the latter part of the paper the authors give some results of their own experiments obtained with two heats containing about 9 and 13% Al and one heat containing about 16% Al and 4% Mo. The chemical composition of these alloys were:

Nr 1	0.03% C	8.81% Al	
Nr 2	0.03% C	13.12% Al	
Nr 3	0.04% C	16.56% Al	4.09% Mo

The material was cast into raw sand moulds to obtain rods of 8 and 20 mm dia. The chemical properties in the as-cast state and in the worked and heat treated states (Tables 5 and 6) were determined, and also the heat resistance and

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69-68

Z/034/60/000/04/0C2/028
E073/E535

Manufacture and Properties of New Iron and Aluminium Alloys

resistance to corrosion. The plots (Figs 1 to 8) are based almost exclusively on literary data, the plot (Fig 9) - weight increase as a function of time at elevated temperatures - is based on data obtained by the author of this paper. The results of the heat resistance tests can be summarised thus:

1. Fe-Al alloys containing 13% Al have a considerably better resistance to oxidation at 1150°C than the steel ČSN N7 161; it can be seen from the plot (Fig 9) that the maximum permissible operating temperature of 1200°C specified by the manufacturer is excessive.
2. The resistance to oxidation of the alloy containing 16% Al and 4% Mo at 1000°C is somewhat lower than for the alloy containing 9% Al; this result seems to indicate that Mo has a harmful influence but this is not confirmed by data in the literature.
3. Alloys containing 13% Al can be used for temperatures up to 1150°C while an alloy containing 16% Al and 4% Mo can be used only up to 1000°C. These data do not agree with other published data which generally are more optimistic.

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69268

Z/034/60/000/04/002/028
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Manufacture and Properties of New Iron and Aluminium Alloys

The results of the corrosion resistance tests in various media of high corrosivity are entered in Table 7. This showed that the use of Fe-Al-Mo alloys should be limited to strong oxidation media or to media which are only slightly aggressive.
There are 9 figures, 7 tables and 24 references, 3 of which are Czech, 1 Soviet, 1 German and 19 English.

ASSOCIATION: SVÚMT, Prague

SUBMITTED: June 23, 1959

Card 3/3

ACCESSION NR: AP4012493 Z/0034/64/000/002/0147/0147

AUTHOR: Vyklicky, M. (Engineer); Lobl, K. (Engineer); Kopal, V. (Engineer)

TITLE: Stainless austenitic-ferrite steel

SOURCE: Hutnicke listy, no. 2, 1964, 147

TOPIC TAGS: austenitic-ferritic steel, intercrystal corrosion, corrosion-resistant steel

ABSTRACT: The object of the invention is the forming and casting of austenitic-ferritic steels resistant to inter-crystal corrosion. These steels contain from 30 to 50 percent ferrite, the remainder is austenite and type $M_{23}C_6$ carbide. The ferrite contains from 22.5 to 25% chrome, and from 3 to 5% nickel, and the austenite contains from 19.5 to 22.5% chrome and from 5 to 8% nickel, with a total contant of carbon in the alloy of up to .25%, a silicon content up to 1%, a 6% manganese content by weight, and with the usual content of inclusions.

A close study of the properties of steel with two-phase austenitic-ferritic structure, either stabilized (about 0.5% titanium) or non-stabilized, was con-

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ACCESSION NR: AP4012493

ducted with material having a carbon content of about 0.1%, a silicon content of about 0.5%, manganese, about 0.5%, chrome, about 20%, and nickel, about 4%. In some cases, these were alloyed with about 2% molybdenum. With heat treatment at 1,050°C air temperature, the following average mechanical properties of steel were determined:

Type of Steel	σ_{Kt} kp/mm^2	σ_t kp/mm^2	10 %	R mkg/cm^2
Cr20Ni14	41.8	85.8	37.5	13.2
Cr20Ni14Ti	49.7	78.0	30.8	8.6
Cr20Ni14Mo2	47.6	72.0	43.1	14.2
Cr20Ni14Mo2Ti	54.1	60.1	18.5	3.6

The nonstabilized steels have considerably better plastic properties than any stabilized steel alloyed in the same way.

ASSOCIATION: None

Card 2/2

ACCESSION NR: AP4042272 Z/0032/64/014/007/0509/0517

AUTHOR: Vyklicky, M.(Engineer); Mericka, M., Kabrhel, A. (Engineer); Tuma, H. (Engineer); Kopal, V.(Engineer); Mursec,M.(Engineer);Dvorak,K.(Engineer); Valtr,V.

TITLE: Corrosion resistance of steel with a two-phase structure of the type Cr21Ni5

SOURCE: Strojirenstvi, v. 14, no. 7, 1964, 509-517

TOPIC TAGS: chromium steel, nickel steel, stainless steel, corrosion resistance, phase structure, alloy steel, alloying, phosphorus, titanium

ABSTRACT: Extensive experiments have been carried out to test corrosion resistance of newly introduced non-rusting steels with a two-phase structure of the type Cr21Ni5, which are mainly utilized in equipment of the chemical industry. The tests were carried out in the laboratory and confirmed by experiments in industrial plants, and included comparisons with classical steels which the new types

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ACCESSION NR: AP4042272

were to replace. Laboratory tests of the usual type were carried out on 30 x 80 x 2 mm (and also 1 mm) samples and plant tests on 20 x x 100 x 2 mm samples. The results of the experiments are in agreement with corrosion theory. Increased phosphorus content lowers the corrosion resistance. The varying effect of titanium added to Cr21Ni5 and Cr18Ni9 in different acids is discussed. In general it is found that the optimal types of two-phase steels have a corrosion resistance similar to that of classical austenite steel while being more economical than the corrosion resistant CSN 17460 and 17471 steels, and exhibiting a much higher intercrystalline-corrosion resistance. It was found that in the food-processing industry Cr21Ni5Ti can almost fully replace CSN 17246 steel. Orig. art. has: 6 figures and 13 tables.

ASSOCIATION: SVUMT, Prague

SUBMITTED: 00 ENCL: 03

SUB CODE: MM NR REF SOV: 001 OTHER: 006

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ACCESSION NR: AP4042272

ENCLOSURE: 01

Ocel 1	ČSN 17 254 Cr21Ni5Ti			ČSN 42 2953 Cr21Ni5	ČSN 42 2938 Cr21Ni5Ti	ČSN 42 2943 Cr21Ni5Mo2
Výrobek 2	Plechy 3	Tyče 4	Výkovky 5	Odlitky 6	Odlitky	Odlitky
σ_{Kt} [kp/mm²] min.	40	38	38	35	35	35
σ_{rt} [kp/mm²]	65—90	65—90	65—90	68—90	65—90	65—90
δ_5 [%] min.	23	20	20	18	12	18
ψ [%] min.	35	35	35	15	10	15
R [mkp/cm²] min.	8	8	8	4	2	4
Tvrdost HB 7	—	—	—	180—250	180—250	180—250

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ACCESSION NR: AP4042272

ENCLOSURE: 02

Svařitelnost 8	zaručená 14	zaručená	zaručená	zaručená
Doporučované elektrody 9	E 390	E 388 E 389	E 389	E 390 E 391
Tepelné zpracování[1]) 10	980—1020 °C	1000—1050 °C	980—1020 °C	980—1020 °C
Teplota použití (maximální) 11	250 °C	300 °C	300 °C	300 °C
Nahrazovaná ocel ČSN 12	17246	422031 422032	422033	422042
Obrobitelnost 13	dobrá 15	dobrá	dobrá	dobrá

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ACCESSION NR: AP4042272 ENCLOSURE: 03

Legend for Enc. 01: 1 - steel, 2 - article, 3 - plate, 4 - rod, 5 - forging, 6 - casging, 7 - hardness, 8 - weldability, 9 - electrodes used, 10 - heat treatment, 11 - maximum operating temperature, 12 - replaces CSN steel, 13 - workability, 14 - guaranteed, 15 - good

*With suggested quenching in water or air. Steels with two-phase structure are more workable than conventionalppure austenitic steels.

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L 57437-65 EWP(w)/EPF(c)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) JD/HM/JG/WB.
ACCESSION NR: AP5017234 CZ/0034/65/000/007/0528/0528

AUTHOR: Vyklicky, M. (Engineer); Lobl, K. (Engineer); Krejci, R. (Engineer) 33 B

TITLE: Cast stainless chromium-nickel steel

SOURCE: Hutnicke listy, no. 7, 1965, 528

TOPIC TAGS: steel, cast steel, stainless steel, chromium nickel steel, stainless chromium nickel steel, cast chromium nickel steel, cast stainless chromium nickel steel

ABSTRACT: This Author Certificate introduces a cast stainless chromium-nickel steel containing 0.12% C, 4.0% Mn, up to 1.5% Si, 18—24% Cr, 15—22% Ni, 2.0—4.0% Mo, 2.5—4.5% Cu, up to 0.1% N, up to 2.0% Co, and up to 0.5% Ti. In presence of 0.2—0.5% V, respective ratios of V:Mo, V:Cu, and V:Ni of 1:8—12, 1:8—16, and 1:43—57 should be maintained, and the Mo content must be at least 5.5%. An increased [illegible] makes the steel corrosion resistant in the active state. The steel [illegible] strength and weldability, and has [illegible] ferrite, which increases [illegible] eliminates susceptibility to weld cracking. Vanadium refines the cast structure of the steel.

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